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Conspicuous Diffusion: Theorizing How Status Drives Innovation in Electric Mobility

Abstract: This paper explores how conceptions of luxury and status affect the manner in which a relatively novel technology—an electric vehicle— diffuses across societies. To do so, it combines Veblen's notion of conspicuous consumption and Roger's diffusion of innovation by proposing a new theoretical variation, which we term "conspicuous diffusion." The paper sketches natural connections between the two theories, namely how conspicuous consumption relates to technological and societal development, and how diffusion of innovation is intrinsically connected to status. In combining these approaches, we hypothesize that the success of an innovation is guided by its adherence to the canons of conspicuousness and conspicuous value, which it loses as the innovation diffuses across the population. To illustrate the explanatory power of conspicuous diffusion, we examine the status of electric vehicles in the Nordic region, based on original data from multiple methods, including expert interviews and focus groups. We find that conspicuous diffusion can explain previous failures and current successes of electric vehicle diffusion patterns. The paper concludes with recommendations for policymakers, industry, and academia.

Keywords: electric vehicles; conspicuous consumption; diffusion of innovation; low carbon transition; Tesla;

1. Introduction

The diffusion of certain technologies, like electric vehicles (EVs), solar panels, or zero-energy homes, are arguably key to the low-carbon transition of society as well as having several important co-benefits such as public health improvements (von Stackelberg et al. 2013; Jacobson et al. 2013). Many have sought to understand how these technologies diffuse, particularly by focusing on sociotechnical processes of decarbonization (B. K. Sovacool and Hess 2017; Geels 2012; Geels et al. 2018; Rogers 2003). However, only a few of these studies have discussed diffusion or transition theory in the scope of EV adoption (Geels 2012; Zhang, Gensler, and Garcia 2011; B. K. Sovacool and Hirsh 2009). In addition, missing from these analyses, particularly when focusing on vehicles, is the role of conspicuous consumption.

In order to better understand the role that conspicuousness and luxury play in the diffusion of technologies such as electric vehicles, this paper proposes a new theory called conspicuous diffusion, which revives Veblen's theory of conspicuous consumption (Veblen and Banta 2009) and then applies it to Roger's diffusion of innovation (Rogers 2003). It then tests and validates this theory with original primary data from expert interviews, focus groups, and surveys throughout the five Nordic countries of Denmark, Finland, Iceland, Norway and Sweden.

Admittedly, the role of status is not entirely new to diffusion theory or examinations of electric vehicles and electric mobility. For example, the role of status and socioeconomics is found throughout the diffusion of innovation literature (Rogers 2003), where status and economics are argued to influence the likelihood of adoption. Schaefers explores how conspicuous consumption influences niche adoption, finding that conspicuous consumption can be a determinant for a consumer's preference for niche products (Schaefers 2014). Sexton & Sexton consider the additional conspicuous value of a Prius, finding that depending on the region, the conspicuous aspects of the Prius could result in additional willingness-to-pay of $400 to $4,000 per car (Sexton and Sexton 2014). Another regression model found that the Prius had an average additional value of about $500 due to its conspicuous value (Delgado, Harriger, and Khanna 2015). Sovacool similarly examined conceptual frameworks for electric mobility, and noted that social and non-monetary aspects play a prominent role in diffusion; as one expert interviewed for the paper noted, "[p]eople are more likely to adopt an electric vehicle when they believe doing so will enhance their status"(B. K. Sovacool 2017). Though all of these papers directly connect aspects of conspicuous consumption to hybrid or full electric vehicles, they tend to overlook broader theoretical implications, particularly in terms of diffusion theory. In addition, a variety of papers have investigated the role that symbolism of ownership plays in EV adoption (Heffner, Kurani, and Turrentine 2007; Schuitema et al. 2013; White and Sintov 2017; Graham-Rowe et al. 2012), though these likewise do not explicitly connect to broader theoretical implications of conspicuous consumption nor diffusion theory.

Writing from an entirely different perspective than that of conspicuous consumption, Veblen subsequently focused on how technology influences society (Papageorgiou and Michaelides 2016; Brette 2003). Veblen sought to trace the evolutionary development of society over time, and suggested that technology could be the primary catalyst of societal and institutional change, contributing to a mode of thought known as "technological determinism" (Papageorgiou and Michaelides 2016). Irrespective of today's criticism against technological determinism, Veblen's original conceptualization of technological determinism was quite flexible and incorporated cultural aspects and the self-reinforcing nature of institutions (Brette 2003). Given the focus on technology, culture and society, this

variant of technological determinism could be interpreted as an early predecessor of diffusion and transition studies. Curiously, however, there is little to no connection between these theories and conspicuous consumption by either Veblen or modern interpretations of technological determinism.

Building on work across both diffusion of innovations and conspicuous consumption, this paper makes several contributions, first and foremost of which is introduction of theory of conspicuous diffusion. While many papers have peripherally investigated the link between technology and conspicuous consumption, our paper offers a testable, cogent theory that applies conspicuous consumption to the entire diffusion process as provided by Roger's diffusion theory. Particularly, we show how conspicuous consumption, which has lately been relegated to the fields of psychology and economics, could improve the understanding of diffusion and transition studies. At the same time we contribute to the diffusion and transition literature by adding a new layer to the understanding of the nexus between technology and status.

To make this case, the paper secondly explores how such conspicuous diffusion can improve the understanding of a specific technology, in this case EVs. This analysis provides a deeper insight into the past failures and current successes of EVs in the Nordic region. Thus, we also offer novel implications for the diffusion of EVs for both policymakers and the industry. Finally we conclude how conspicuous diffusion could impact future academic research in innovation diffusion and sociotechnical transitions.

2. Conspicuous Diffusion

In this section, the paper combines the theories of conspicuous consumption with diffusion of innovation to explain how the luxury of a novel technology, such as electric vehicles, can play an important role in adoption. However, first, we give a brief summary of conspicuous consumption, and then discuss how it could impact the diffusion of innovations (Rogers 2003).

2.1 Conspicuous Consumption

The concept of conspicuous consumption was first discussed by Thorstein Veblen in his seminal work *The Theory of the Leisure Class* (Veblen and Banta 2009). In short, Veblen developed an evolutionary framework to explain the wasteful behavior of the leisure class in the 19th century as method for the rich to conspicuously display excess wealth to promote their social status (Veblen and Banta 2009; Trigg 2001). Conspicuous displays took various forms that permeated all of society, including conspicuous subservience (wives displaying their servitude to their husbands and avoiding useful labor), conspicuous leisure (displaying the lack of need to work), conspicuous consumption (wasting excess wealth on products and goods), and conspicuous devotion (participating in religious rituals, displaying lack of need to work and excess wealth), among others (Veblen and Banta 2009). However, at the center of all of these conspicuous displays is the element of waste, which Veblen argued allowed the leisure class to invidiously distinguish themselves from the lower classes, by showing pecuniary strength in the capacity to indulge in excess. Thus, the central idea of conspicuous consumption is that individuals are driven to obtain wealth so that they can conspicuously waste to improve their social status in the eyes of others.

Powerfully, the conspicuous traditions of the leisure class shapes all of society, as anything that did not fit within the "canon of conspicuous waste" was viewed as necessarily low-class and undesirable (Veblen and Banta 2009). Thus, in order to fit within these canons and to distinguish themselves from even lower classes, other classes aspired to imitate the leisure classes in conspicuous consumption, a

process that Veblen described as “pecuniary emulation” (Veblen and Banta 2009; Bagwell and Bernheim 1996). As a result, conspicuous consumption sends social signals and “trickles down” to all classes of society. Concomitantly, the values of conspicuous consumption also pervade the institutions of society, such as religion, economic organizations, the arts, sports, academia, and gender roles (Hirsch 1995; Luhmann and Luhmann 2008). Veblen argues that these institutions act conservatively to hinder cultural developments that would threaten the leisure class and conspicuous consumption (Veblen and Banta 2009). Nonetheless, although Veblen argued that conspicuous consumption structures all of society and its institutions, the conceptualization of conspicuous consumption remains vague and under-researched today, due to Veblen’s lack of a unified and cogent theory (Patsiaouras and Fitchett 2012; Campbell 1995). Indeed, there have only been a handful of articles that discuss conspicuous consumption in terms of broader economic theory (Arrow and Dasgupta 2009; Bagwell and Bernheim 1996; Collins, Baer, and Weber 2015).

As a result, recent work on conspicuous consumption has instead tended to focus on the consumer psychology of individuals and their motivations in purchase. For example, one important development of conspicuous consumption is the connection to status-seeking behavior and sexual behavior. Various research has found that men tend to conspicuously consume in order to impress and attract a mate (Sundie et al. 2011; Collins, Baer, and Weber 2015; Janssens et al. 2011; Segal and Podoshen 2013; Griskevicius et al. 2007; Saad and Vongas 2009). Though men have continually been found to spend more conspicuously, particularly for mate attraction, other research has found that women utilize conspicuous consumption for mate guarding and retention (Wang and Griskevicius 2014). Alternatively, romantic motives were also found to increase women’s “blatant benevolence”, i.e. their conspicuous effort to help others (Griskevicius et al. 2007). Thus, sexuality and gender play an important role in the modern conceptualization of conspicuous consumption.

Beyond sexual attraction, other forms of conspicuous consumption have been identified, such as conspicuous altruism and conspicuous conservatism (Zabkar and Hosta 2013; Griskevicius, Tybur, and Van den Bergh 2010; Sexton and Sexton 2014; Delgado, Harriger, and Khanna 2015). Essentially it is argued that individuals act altruistic or conserve resources conspicuously to show that they can “waste” excess resources and increase their social status (Griskevicius, Tybur, and Van den Bergh 2010). It is important to note that status-gaining is usually not the exclusive purpose of conspicuous consumption, and many forms of conspicuous consumptions have other benefits to the individual and society (Veblen and Banta 2009). Consequently, this may “deceive” consumers into thinking that they were acting for other reasons, when in fact their actions were determined by the “law of conspicuous waste” (Campbell 1995, 39–40). Pertinent to our discussion below, many papers focused on how conspicuous consumption could describe the adoption of environmental products, such as the Toyota Prius, even over other hybrid vehicles (Sexton and Sexton 2014; Delgado, Harriger, and Khanna 2015). For the remainder of the paper we use the term “conspicuous consumption” to encapsulate all forms of conspicuousness, but we describe the different conceptualizations and topics related to conspicuous consumption in Table 1 (noting that there can often be overlap between the various constructions).

Conspicuous Consumption Topics	***Short Definition***
Conspicuous Consumption	Individuals are driven to obtain wealth so that they can conspicuously waste and improve their social status in the eyes of others

Invidious Comparison	Higher classes conspicuously consume to distinguish themselves from lower classes, improving their social status	
Pecuniary Emulation	Lower classes conspicuously consume to avoid designation of low-status, imitating higher classes consumption patterns	
Canons of Conspicuousness	An admittedly nebulously-defined regulative force, typically a set of principles that defines and guides consumption habits in accordance with societally-defined wastefulness and conspicuous value, distinguishing elites from lower class	
Luxury	High quality goods or consumption thereof, often associated with "traditional" conspicuous consumption given connections with expensiveness and wastefulness	
Conspicuous Conceptualization	***Exemplary Citation(s)***	***Short Definition***
Costly Signaling/Mate Attraction	(Sundie et al. 2011; Janssens et al. 2011; Saad and Vongas 2009)	Individuals demonstrate their suitability as a mate by conspicuously wasting excess resources to show ability to absorb handicaps
Conspicuous Altruism (or Blatant Benevolence)	(Griskevicius et al. 2007)	Individuals conspicuously act to benefit society and others to show ability to endure high costs (monetary, time, or energy related) and garner high status
Conspicuous Conservation (or Pro-Environmental Signaling)	(Sexton and Sexton 2014; Delgado, Harriger, and Khanna 2015; Griskevicius, Tybur, and Van den Bergh 2010)	Individuals adopt environmentally-beneficial products to show that they are pro-environmental, or being "green to be seen"
Conspicuous Innovation	(Schaefers 2014)	Individuals conspicuously consume niche products to differentiate themselves as innovators

Table 1. Overview of Conspicuous Consumption, Related Topics and Conceptualizations. Note that this is only a partial list of potential conceptualizations, and can encapsulate other topics unrelated to the paper, such as religion, military and academia (Veblen and Banta 2009).

In sum, there are a myriad of ways that individuals use conspicuousness to convert excess income to pecuniary-based status. Displays of pecuniary strength affects consumer behavior in all classes, by either invidious comparison or pecuniary emulation. This construction of consumer behavior, now connected to gender and sexual behavior, shows that conspicuous attributes of a variety of goods will necessarily affect its adoption.

A variety of works have also more explicitly connected conspicuous consumption to either innovation or technical development. Conspicuous consumption has been attributed as a contributing factor to modern economic growth, by increasing work effort participation and more importantly, driving technological progress (Collins, Baer, and Weber 2015). Both Veblen and the concept of luxury were intrinsically connected to technological development. For example, Veblen argued that the development of technology is what caused society to evolve to give rise to the existence of conspicuous

consumption (Veblen and Banta 2009; Patsiaouras and Fitchett 2012). Similarly, the concept of luxury, and thus conspicuous consumption, was historically connected to the development of science and technology (Jennings 2007). Some even argue that conspicuous consumption could be seen as a mechanism which converts a luxury to a need. Indeed,"[w]hat was luxury for Diogenes was necessity for Rousseau" (Jennings 2007, 103), and a luxury for Rousseau is now a need for modern society. The nebulous distinction between luxury and need has continued to shift downwards (Mathiowetz 2010), potentially due to pecuniary emulation, which in turn drives the top classes to endlessly strive for new ways to invidiously distinguish themselves again (Trigg 2001). But in spite of the evident connections to technology, there has been no theoretical application of conspicuous consumption to diffusion studies.

2.2 Diffusion of Innovation

Emerging from a completely separate set of disciplines and lines of argument, the diffusion of innovation explains the process in which an innovation diffuses through communication channels across a population (Rogers 2003). The innovation itself has five characteristics: relative advantage, compatibility, complexity, trialability, observability. At the same time, the population is classified into five categories: innovators, early adopters, early majority, later majority, and laggards, based on innovativeness, and assumed to be a normal distribution. Each of these adopter categories follow five main steps in the innovation-decision process: 1) knowledge, 2) persuasion, 3) decision, 4) implementation, and 5) confirmation. Adoption of an innovation follows a curve, due to the normal distribution of innovativeness in the five adopter categories and the process of communicating and dispensing information throughout society (Rogers 2003).

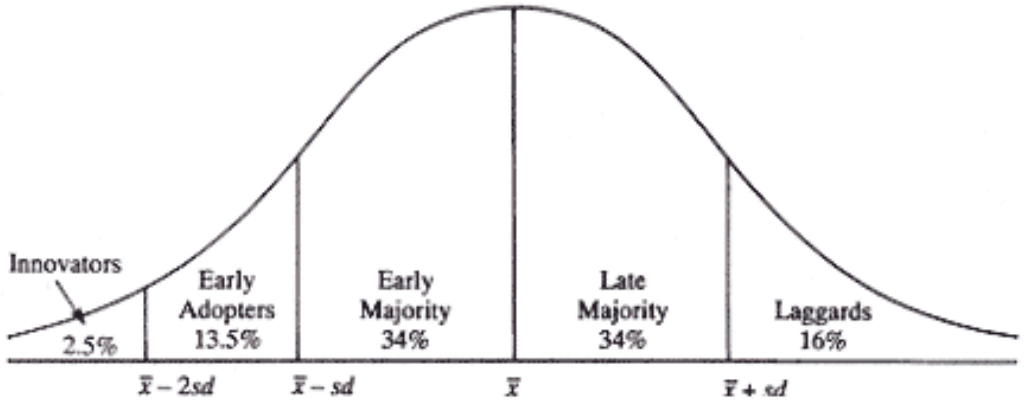

Figure 1: Classical U-Shaped Diffusion of Innovations Curve. Adopted from (Rogers 2003).

Although Rogers's diffusion of innovation theory has become popular within many research communities, it has some notable shortcomings. It primarily focuses on adopters or users as buyers, yet many times adopters decide to purchase or use a technology in many different ways or reasons beyond the innovation's attributes, such as cost (Kemp and Volpi 2008). Moreover, the theory often focuses on a single innovation and treats it as fairly static; whereas in reality technologies co-evolve with the diffusion of other innovations, making the process highly unpredictable and dynamic—both technologies and population of potential adopters are constantly changing over time (Kemp and Volpi 2008). The result here is that no single diffusion curve exists; instead, there are multiple diffusion processes over differing applications with interrelated diffusion curves (Lyytinen and Damsgaard 2001). Another critique is that those applying the theory often treat consumer preferences or innovation

attributes as predetermined—they are a given before the diffusion process starts—yet many times such preferences and patterns become articulated during the diffusion process itself (Lyytinen and Damsgaard 2001). Geels and Johnson add that the empirical evidence base that applies Roger's theory has remained limited to a narrow range of discrete products (radios, televisions, refrigerators, phones, computers) and downplays the role of other actors beyond adopters in the innovation process, such as firms, policymakers, and wider publics (Geels and Johnson 2018).

Despite these criticisms, the theory of diffusion of innovation has been instrumental to a more technical understanding of how technologies succeed or fail in their diffusion in a variety of fields (Meade and Islam 2006; Rogers 2003), but an underlying and under-recognized thread is the role of status already entrenched in diffusion of innovation. Just as conspicuous consumption is readily connected to diffusion, so too is diffusion of innovation readily connected to conspicuous consumption. There are several of such connections, the first of which is Rogers' identifying that status-conferring benefits may be the deciding factor ("relative advantage") for a consumer when decide whether to adopt an innovation, particularly for highly-visible innovations, like cars or clothing (Rogers 2003). More to the point, Rogers finds that the innovation's observability (i.e. conspicuousness), as perceived by the society, is positively related to success of diffusion and adoption (Rogers 2003). At the same time, Rogers also finds that adopter categories are correlated with socioeconomic status; high status individuals have the capacity to experiment with new innovations, and as such, are targeted by the developers of the innovation. Meanwhile consumers who have low economic resources are considered to be laggards, as they do not have the excess wealth to risk on a new innovation. Finally, the diffusion process, when not actively corrected, will often widen the gap between higher and lower classes in a society (Rogers 2003), mirroring how Veblen described institutions reinforcing the leisure class and the canons of conspicuous consumption (Veblen and Banta 2009).

2.3 Introducing Conspicuous Diffusion

Conspicuous consumption can complement some of the theoretical weaknesses in the diffusion of innovation, and vice versa, for multiple reasons elaborated on in this subsection. For example, Rogers specifically called for future research to increase the understanding of individual's motivations to adopt certain innovations (Rogers 2003). Furthermore, Rogers also acknowledged that status likely played a very important role in the diffusion process, but lamented that "we do not really know because so few diffusion researchers have tried to assess motivations for adoption" (Rogers 2003, 116). We propose that conspicuous consumption can fill this research gap by providing a mechanism to explain how and why individuals adopt certain innovations.

Moreover, various authors have critiqued diffusion of innovation has being overly focused on an individual scale, and under-appreciates the role that societal contexts can play (MacVaugh and Schiavone 2010; Geels et al. 2018). As such, we likewise propose that the canons of conspicuous consumption (Veblen's term for the regulative force conspicuous consumption has on society) (Veblen and Banta 2009) could be a novel explanation for how societal norms can influence consumer behavior and guide innovation. We additionally propose the natural propensity of institutions to propagate these conspicuous canons are a mechanism to explain how other actors and organizations act to guide the diffusion process.

We believe these approaches can be fruitfully integrated into "conspicuous diffusion". To illustrate, we depict the modified diffusion process step-by-step of an innovation. First and foremost,

the innovation itself must fall within the canons of conspicuousness. The canons of conspicuous waste can be reinterpreted as a regulative force that ensures that only innovations that coincide with conspicuousness garner reputability and are adopted. In short, in order for an innovation to be adopted, "the innovation must have the support of the canon of conspicuous waste" (Veblen and Banta 2009, 106). Akin to the conservative nature of institutions, this hinders innovations that would stretch society away from conspicuous consumption, and preferring those that fit within the existing paradigm (Veblen and Banta 2009; B. K. Sovacool, Noel, and Orsato 2017).

Assuming that an innovation conforms to the canons of conspicuousness, it then begins the process of diffusion throughout the population. Linking conspicuousness to Rogers' diffusion theory adds two motives for adoption: 1) invidious comparison, where higher classes conspicuously consume to distinguish themselves from lower classes, and 2) pecuniary emulation, where the subsequent lower classes conspicuously consume to imitate the higher classes and garner similar status (Bagwell and Bernheim 1996; Veblen and Banta 2009). In addition, pecuniary emulation can have other motivations beyond enhancing other's esteem of the consumer, such as increasing self-esteem by knowing that conspicuous consumption is widening the pecuniary interval between oneself and the average (Campbell 1995). However, once the innovation hits a critical mass (Rogers 2003), it consequently becomes increasingly associated with the canons of conspicuousness and is seen as an "ideal of decency" (Veblen and Banta 2009). At this point, consumers (who have not adopted the innovation yet) begin to accept the innovation as "in vogue" and adopt in order to conspicuously conform to the ideals of the next higher stratum (Veblen and Banta 2009), and essentially, to fit in.

The role of conspicuous consumption is also clear when exploring the diffusion as according to the categories of adopters shown in Figure 2. At the beginning of the diffusion process, the innovation begins at a very high price and acts as a niche product. As a result innovators who have the economic flexibility can take the risk to adopt and conspicuously display their innovativeness. Indeed, there is already evidence that suggests that conspicuous consumption drives and determines consumer preference for niche innovations (Schaefers 2014). Additionally, given that conspicuous consumption may be the result of mate attraction (Sundie et al. 2011; Collins, Baer, and Weber 2015; Janssens et al. 2011; Segal and Podoshen 2013; Griskevicius et al. 2007; Saad and Vongas 2009), conspicuous consumption explains why the innovator adopter category tends to be more male than female for conspicuous innovations (Schaefers 2014). As the innovation becomes more visible and is communicated to heterophilous groups via communication channels, it garners social reputability for the innovators, which in turn causes the next adopters to pecuniarily emulate.

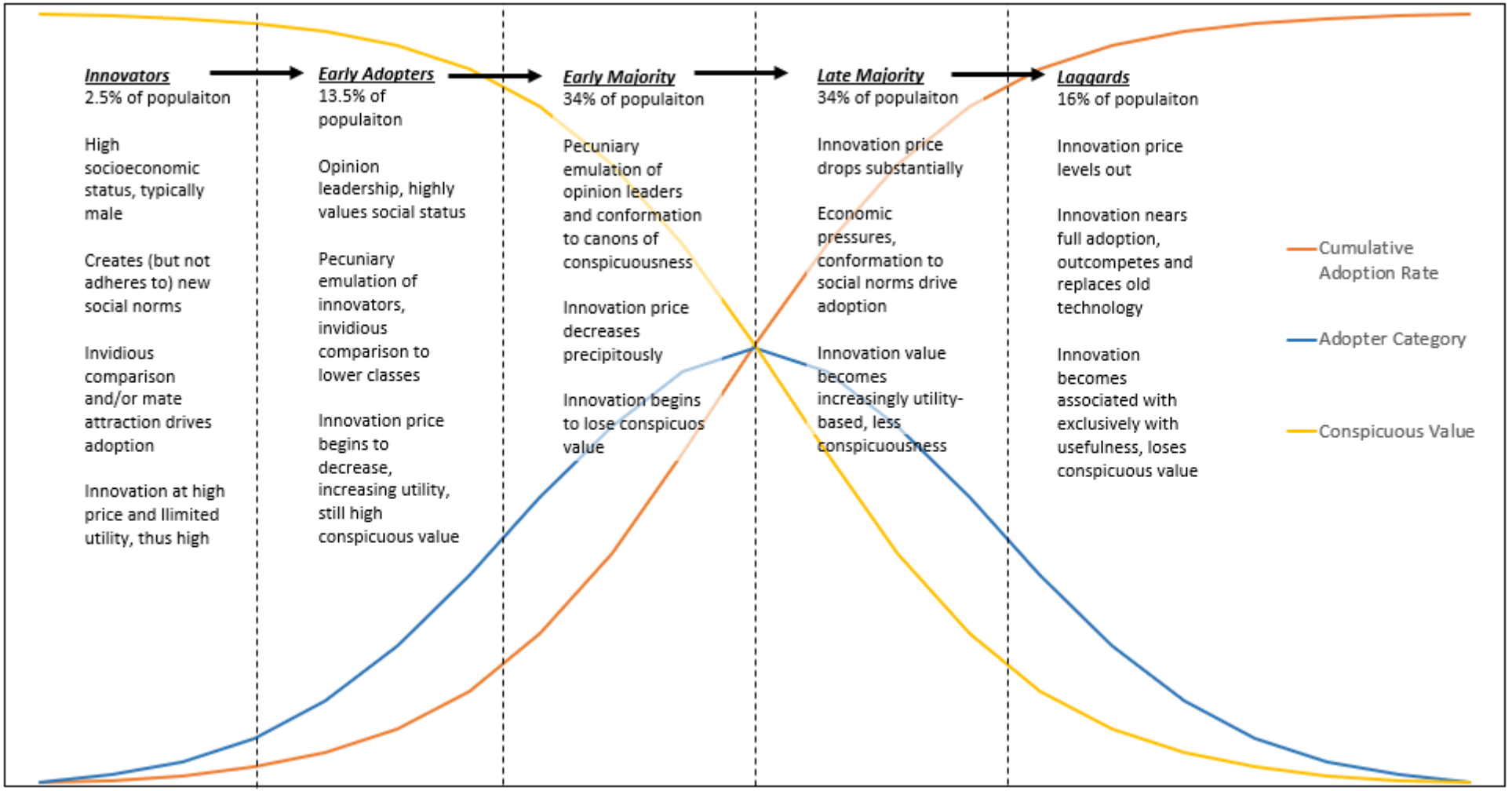

Figure 2. Idealized Conspicuous Diffusion Process, based on Adopter Categories in (Rogers 2003)

Next, early adopters are similar to innovators in that they too have pecuniary strength to experiment on new innovations, but are distinguished by their higher susceptibility to social norms (Rogers 2003; Schaefers 2014). As such, early adopters are both invidiously distinguishing themselves from lower adopter categories as opinion leaders (Rogers 2003), but also emulating the consumption patterns of the individuals situated above them (Trigg 2001). In order to balance between these two forces, early adopters must be judicious in their innovation adoptions, to maintain the esteem of colleagues and remain an opinion leader (Rogers 2003). As opinion leaders, early adopters are integral to transporting the innovation down the diffusion process, acting as "a role model for many other members of a social system" (Rogers 2003, 283), driving further emulative behavior in the categories situated below them. Arguably, once the early adopter category adopts an innovation, they "put their stamp of approval" on the innovation (Rogers 2003) validating and incorporating the innovation as part of the canon of conspicuousness. Likewise the increasing adoption rate begins to near the point of critical mass, where the innovation's diffusion becomes self-sustaining.

Consequently, adoption truly accelerates in the early majority. At this stage, pecuniary emulation continues to drive the adoption of the innovation, however, it begins to take a new form. Since the innovation has become accepted as a conspicuous innovation by opinion leaders, the pecuniary emulation of the early majority is driven by a need to conform to the established uses of the innovation, and to avoid unfavorable judgement by peers (Veblen and Banta 2009). The early majority is characterized by its deliberateness; they will seldom lead adoption of an innovation but will follow and emulate the opinion leaders in the early adopter category that validate the innovation (Rogers 2003). The adoption rate of the innovation skyrockets, which in turn causes the price of the innovation to decrease substantially, and to cement the innovation as a social norm, under the canons of conspicuousness. The conspicuous factor of the innovation continues to shift from granting new status to conforming to and retaining status as a result of the selective guidance prescribed by higher classes (Veblen and Banta 2009). Likewise, status motivations are important throughout the three first categories of adopters, and less important for the following two lagging categories (Rogers 2003; Schaefers 2014).

The late majority begins adoption, not out of pecuniary emulation, but for two other reasons. First and foremost, as the price of the innovation begins to fall, adoption may be an economic necessity as those without that product run the risk of losing their ability to participate in society (the lack of car-ownership in the late 20th century, the lack of internet access nowadays). Secondly, the late majority may also adopt the innovation as "the result of increasing peer pressures" (Rogers 2003, 284), in order "to conform to established usage… [and] to live up to the accepted canons of decency" (Veblen and Banta 2009, 78). Indeed. Rogers argues that the late majority typically lack resources and are necessarily skeptical towards innovations, so the removal of economic uncertainty and definitive peer pressure are both requisite for this category to adopt an innovation (Rogers 2003). Once these two stipulations are met, the late majority begrudgingly adopts, causing the innovation to diffuse through the majority of the society, becoming common and consequently less conspicuously valuable. At the same time, increased production causes the innovation's price to continue its steep decline.

Finally, the diffusion nears completion at the laggard stage. The laggard category is characterized by its precarious economic position (Rogers 2003, 285), which forces even more extreme caution in adoption innovation but simultaneously excludes them socially as not adhering to the norm That said, the precarious economic position implies that they do not have the luxury to be concerned

with status or the canons of conspicuous consumption, as their energy is focused on daily exigencies (Veblen and Banta 2009, 135). As such, adoption will only occur when the price of the innovation has dropped to such a threshold that it outcompetes and obviates older technology. Because the innovation has become inexpensive and lower-class, the innovation becomes increasingly serviceable and common, and thus disreputable and vulgar (Veblen and Banta 2009). As a result, the innovation loses most or all of its conspicuous value, completing the conspicuous diffusion process. The innovation that had originally invidiously distinguished the higher classes can now be acquired by all and therefore no longer confers status. Necessarily, innovators and early adopters begin to search for new innovations to re-distinguish themselves again (Trigg 2001, 101), restarting the conspicuous diffusion process once an innovation is found that coincides with the canon of wastefulness.

A brief example is the diffusion of the cell phone, an innovation that is particularly visible. When first introduced the cell phone was particularly expensive (upwards of $3,000), and had very limited practical utility (Rogers 2003). First adopters were high-status male executives, invidiously distinguishing themselves from their employees with a conspicuous, expensive, and novel technology. Next, the technology began to increase in utility and decrease in price until it became “fashionable” and “an important status symbol” (Rogers 2003, 263). Indeed, Rogers, in the his latest edition of his book, argues that the status conferred by using cell phones explains their regular use in restaurants and other public places (Rogers 2003).

However, since then, the price of cell phones has continued to decrease and adoption has reached over 90% (Anderson 2015). As a result, the cell phone no longer has the conspicuous value it once had, and instead has utilitarian value, and instead conspicuous value comes from new innovations within cell phones, such as the advent of smart phones or Apple iPhones. The continuous improvements of cell phones could be considered successive generations of conspicuous innovations (Meade and Islam 2006; Rogers 2003), which recommence the conspicuous diffusion process recurrently. That is to say, being among the first to own an Apple iPhone 7 has large conspicuous value, but pecuniary emulation drives full adoption to a large proportion of the social system, upon which it is common and loses its conspicuous value, and is instead adopted for purely utility gains at low or equivalent costs. Then, the next iteration of smart phones (i.e., the iPhone 8) regains conspicuous value, and thus restarts the conspicuous diffusion process.

Beyond the individual scale, the entire conspicuous diffusion process is motivated and guided by the canons of conspicuousness. At a societal level, Veblen argues that these canons coalesced into institutions which further solidify and stabilize conspicuous consumption (Veblen and Banta 2009, 136). These institutions hinder cultural and technological development, and filters any development that threatens the stability of the institutions. As a result, the evolution of habits prescribed by institutions necessarily takes time, and innovators cannot “effect a sudden revolution” at their own discretion without any respect to the institutional requirements of conspicuousness (Veblen and Banta 2009). Thus, if an innovation is not “correctly” conspicuous, it will face an uphill battle against various institutions aiming to stabilize the canons of conspicuous consumption.

Admittedly, we acknowledge that the proposed theory has some limitations and is not meant to describe all types of diffusion and transitions. Indeed there are several key limitations of the proposed theory of conspicuous diffusion, deriving from weaknesses in both conspicuous consumption and diffusion of innovation. Firstly and most obviously, not all innovations are conspicuous. Thus, while the

proposed theory may have advantages in describing the diffusion of plainly visible and status-oriented innovations like cars and cell phones, it may be less useful for less conspicuous technologies, such as some home energy efficiency measures. On the other hand, perhaps a lack of conspicuous could explain irrational non-adoption of such technologies.

Next, conspicuous diffusion overly focuses on individual adopters. As a result it is perhaps less useful to explain the diffusion of institutional adoptions. For example, the diffusion of a complex, standards-based information technology, where the adopters are primarily institutions (i.e. not individuals) (Lyytinen and Damsgaard 2001) is unlikely to be applicable to conspicuous diffusion. And, while conspicuous consumption attempts to bring more societal significance to diffusion of innovation, there is much left to capture of the multi-level process of technological adoption (MacVaugh and Schiavone 2010; Geels et al. 2018). Specifically, Geels et al. argue that "an individualist orientation…underrates the significance of the collective and structural factors that shape behavior, guide innovation and enable and constrain individual choice" (Geels et al. 2018, 24). While the canons of conspicuous consumption may be *one* factor that incorporates external embedding of an individual's choice, there are assuredly many other mechanisms in play.

Likewise, conspicuous diffusion is overly reliant on top-down class and economics, particularly given a shift from class-orientated to lifestyle-orientated consumer behavior (Trigg 2001). Even in Veblen, the distinction between a luxury (and thus having conspicuous value) and a need is relatively nebulous, and what some may consider a luxury others may not view as having any conspicuous value (Mathiowetz 2010). For example one may view an electric car has having conspicuous value (perhaps as conspicuous altruism), whereas others would view the same car as having disutility (Sexton and Sexton 2014; Hidrue et al. 2011). As such, conspicuous diffusion must have a more nuanced perspective of conspicuous consumption, wastefulness and the canons of conspicuousness, more differentiated by individual lifestyle and identity (Trigg 2001; Brick, Sherman, and Kim 2017).

3. Research Methods and Empirical Strategy

In order to better understand how conspicuous diffusion would apply to an innovation, we investigate electric vehicle adoption in the Nordic region. To properly define of the status and history of electric vehicles adoption in the Nordic region, we present original data collected from multiple methods, including expert interviews, consumer focus groups, and a survey. In research methodology terms, our study is exploratory (rather than confirmatory), and it is hypothesis generating rather than hypothesis testing (B. Sovacool, Axsen, and Sorrell 2018). Data collection for all three methods took place from September 2016 to October 2017, and centered on the sociotechnical benefits and barriers of electric vehicles and vehicle-to-grid technology, but both the experts and focus group participants discussed topics relevant to conspicuous diffusion (unprompted).

First, the authors conducted 227 semi-structured expert interviews with 257 participants from over 200 institutions in the five Nordic countries. A brief summary of the interview participants is presented in Table 2.

Classifications	Interviews (n=227)	Respondents (n=257)	% of Respondents
Country = Iceland (Sept-Oct 2016)	29	36	14.0%
Country = Sweden (Nov-Dec 2016)	42	44	17.1%
Country = Denmark (Jan-Mar 2017)	45	53	20.6%

Country = Finland (Mar 2017)	50	57	22.2%
Country = Norway (Apr-May 2017)	61	67	26.1%
Gender = Male	160	207	80,5%
Gender = Female	40	50	19.5%
Gender = Group	27		
Focus = Transport or Logistics	73	81	31.5%
Focus = Energy or Electricity System	63	75	29.2%
Focus = Funding or Investment	10	12	4.7%
Focus = Environment or Climate Change	12	16	6.2%
Focus = Fuel Consumption and Technology	22	23	8.9%
Focus = Other	13	14	5.4%
Focus = EVs and Charging Technology	34	36	14.0%
Sector = Commercial	68	70	27.2%
Sector = Public	37	46	17.9%
Sector = Semi-Public	40	51	19.8%
Sector = Research	37	39	15.2%
Sector = Non-Profit and Media	12	13	5.1%
Sector = Lobby	23	25	9.7%
Sector = Consultancy	10	10	3.9%

Table 2. Overview of Interviews. Source: Authors. Focus represents the primary focus area of the organization or person in question, sector represents the sector the company was working in (semi-public referring to commercial companies owned by public authorities, like DSOs).

As shown in Table 2, the experts represent a diverse array of stakeholders involved in transportation, energy and the environment. These interviews generally lasted between thirty and ninety minutes, and participants were asked several questions about the benefits and barriers of both electric vehicles and vehicle-to-grid. However, due to the open-ended nature of the semi-structured interview, many of the experts began to discuss the role of luxury and conspicuousness in terms of electric vehicles. After collection of the interview data, each interview was subsequently fully transcribed, and then coded in NVIVO with grounded theory in mind, meaning that most of the coding themes were generated from the data, not prior to analysis.

Next, while expert interviews provided in-depth discussion of electric vehicles, focus groups were concomitantly organized in order to complement expert perspectives with the consumer's laymen perspectives. In total, 8 focus groups were conducted, with a total of 50 participants across six Nordic cities, as shown in Table 3. In addition, two of these focus groups were exclusively a single gender (one all-male, one all-female) and asked additional questions about how gender affects EVs. Each focus group was asked similar questions that were asked the experts, namely about their perceptions of electric vehicles and vehicle-to-grid benefits and barriers to adoption. However, the free-flowing nature of focus groups also allowed the discussion to cover various other topics relevant to conspicuous diffusion. Similarly, after data collection was complete, each focus group was fully transcribed and coded. Likewise, to provide further context, we also supplement our methods with a literature review of papers related to electric vehicle deployment specifically within the Nordic region.

Classifications	**Participants (n=61)**	**% of Participants**
F1: Iceland (Oct 2016)	5	11%
F2: Sweden (Nov 2016)	6	7%
F3: Denmark [Mixed Gender] (Feb 2017)	10	11%
F4: Finland 1 (Mar 2017)	9	10%

F5: Finland 2 (Mar 2017)	7	8%
F6: Denmark [Male] (Jun 2017)	7	8%
F7: Denmark [Female] (Jun 2017)	8	9%
F8: Norway (Sept 2017)	9	10%
Gender = Male	29	48%
Gender = Female	32	52%
Have Driver's License	50	82%
Currently own a car	29	48%
Experienced an EV	8	13%
Own an EV	0	0%

Table 3. Overview of Focus Groups. Focus groups were conducted in the six cities of Aarhus, Bergen, Gothenburg, Helsinki, Reykjavik, and Tampere.

4. Results: The Conspicuous Diffusion of Nordic Electric Vehicles

First and foremost, conspicuous diffusion is particularly appropriate for the diffusion of vehicle-related technology in general, and specifically electric vehicles. Cars are one of the most visible and conspicuous goods, ranking only behind cigarettes in a survey-based index of social visibility (Heffetz 2011). Likewise, new car technologies, such as hybrid vehicles, have been a focus of both diffusion literature (Rogers 2003) as well as conspicuous consumption literature (Sexton and Sexton 2014; Schaefers 2014; Delgado, Harriger, and Khanna 2015; Griskevicius, Tybur, and Van den Bergh 2010). Thus, not only are electric vehicles an ideal case study for conspicuous diffusion, conspicuous diffusion can also provide a better understanding of the status and failures of electric vehicles.

Electric vehicle adoption around the world currently is only 0.2% of current global car stock (IEA 2017), and as such would be considered to be in the innovator category according to Rogers. Norway has vastly surpassed the global average (IEA 2017), and indeed may have moved down to the early adopter category of Rogers, allowing comparisons across the five Nordic countries examined. In accordance with our proposed theory of conspicuous diffusion, conspicuous value is essential to an innovation's success. Moreover, given that conspicuous value has been differentiated by lifestyle and individual tastes, we also propose that an electric vehicle that captures the most variety of conspicuous consumption, i.e., conspicuous wastefulness, conspicuous altruism, blatant benevolence, etc., will have the highest degree of diffusion success. However, in stark contrast through, previous unsuccessful introductions of electric vehicles in the Nordics lacked conspicuous value, and conspicuous diffusion theory may help explain their failures.

Here, we organize our results according to three sequential dimensions: filtering, capturing, and emulation.

4.1 Filtering: Through the Canons of Conspicuousness

The canons of conspicuousness were evident across our interview sample (and focus groups) in salient and even shocking ways. The adoption of EVs is characterized, initially, by the complete absence of any conspicuous attributes of the early electric vehicles as exemplified by reflections on early Norwegian EVs and the Danish experience of Better Place. As a consequences of this initial absence in both these projects, non-conspicuous stereotypes lingered and remain part of the adoption debate until this day.

For example, two EV companies in Norway, the Th!nk and Buddy, attempted to diffuse the EV by creating a small reasonable two-seater EV that maximized utility and minimizing cost. Although Th!nk and Buddy represented a large proportion of EVs in Norway before the 2010's, as of the end of 2013 there were only about 1,000 of each car registered in Norway (Norsk Elbilforening 2013). From a conspicuous diffusion perspective, these cars were viewed negatively because they were exclusively utilitarian, and would be distasteful according to the canons of conspicuous consumption. As such, these innovations failed to move past the first step of conspicuous diffusion, and are consequently considered conspicuously unpleasant. For example, R196 (connecting conspicuous diffusion's appeal to male mate attraction) suggested that driving a Buddy would turn one geriatric:

> *"And then you have Buddy, you know the car called Buddy? I mean, my god, put your ass in that one, you look eighty years old."*

Digging deeper into the gendered aspects of conspicuous diffusion, R196 added that the Th!nk had zero sexual appeal:

> *"You have this story in Norway about the car called Th!nk. It looked like a fucking dustbin! It was a plastic can on wheels! Where is the dick factor on that one, you know?"*

Many experts added on that these two EV companies did not feel or look like a real car, both of which are essential to conspicuous consumption (Mathiowetz 2010) (Heffetz 2011). R228 called these early EVs "eggs" which made "you feel like a chicken". The lack of looking and feeling like a real car not only inhibited these EVs from diffusing across Nordic society, but R234 believed the residual conceptualizations of the Th!nk and Buddy is one of the main impediments facing current diffusion of EVs:

> *"One of the problems is that we had the Norwegian company called THiNK, which looks like a toy car. So ten years ago, if you said electric car, people would think about the Buddy and have a good laugh. It's like a nutty car. Sort of a plastic box on wheels, and it's very eccentric."*

Indeed, a lasting result of the Th!nk and Buddy is that when a non-conspicuous innovation fails, it conditions future potential adopters to view the newer versions of the innovation with apprehension or hesitancy (Rogers 2003, 245). This stigma attached to earlier EVs was clear in the perspective of the consumers of other Nordics, as one Danish participant in F3 said:

> "*Have you ever driven an electric car? It's like eating food without taste.*"

Other participants, such as those in F1, also argued that the Icelandic consumer's perception of EVs was a major barrier, colored by previous non-conspicuous EV failures:

> *"We are used to electric vehicles being golf carts and kid's cars or something like that. Actually just changing the mentality for electric vehicles is an uphill battle."*

In sum, from the perspective of conspicuous diffusion, the Buddy and the Th!nk lacked the conspicuous appeal for the (largely male) innovator category to adopt, and potentially damaged the conspicuous value of EVs in the short term.

Another notable failure in the Nordics is the introduction of Better Place electric vehicles in Denmark (Noel and Sovacool 2016). Despite being one of the first EVs to have the support of a major

automotive OEM (Renault), and also having significant financial support that allowed Better Place to create a car and system that apparently resolved the technical problems with EVs, the company failed to make any progress in the diffusion process, selling fewer than 400 cars in Denmark (Noel and Sovacool 2016). From the perspective of conspicuous diffusion, a contributing factor to Better Place's failure was the lack of conspicuous appeal (especially when taking the "correcting" of the past EV diffusion failures above into consideration), instead overly focusing on expensively resolving technical issues. As a result, experts like R126 believed that Better Place was ill-suited for the private sector (partially because there was only one model) and instead should have focused on the heavy-duty sector, where technical and economic solutions matter more than conspicuousness.

Though it promised an inexpensive (and thus non-conspicuous) EV, in the end, Better Place vehicles were more expensive than the average Danish car, while concomitantly lacking any luxury value. While discussing the failure of Better Place, R115 noted that Better Place cars were too expensive and lacked luxury within the car, especially compared to modern (and more successful) EVs:

> *"Better Place actually tried to build their own in-car system, but never really ended up with something much nicer. The experience you get from modern luxury cars like Tesla is something nice, but no other EVs do something nice."*

Since Better Place failed to undercut the cost of a traditional vehicle (a truly difficult prospect for a new technology), the lack of luxury and conspicuous value prevented the Better Place innovation from beginning the conspicuous diffusion process. Perhaps if Better Place had strategized and leaned into the expensive aspects of an EV by reconstructing them as a luxury, their diffusion process would have been more successful. An implication here is that one cannot skip the beginning processes of conspicuous diffusion to make a cheap mass-market EV for all consumers. Instead, it necessarily begins with an expensive and conspicuous innovation.

4.2 Capturing Conspicuousness: Maximizing Invidious Comparison

Arguably all EV brands have some aspect of conspicuousness in the Nordic region, namely conspicuous altruism and conspicuous conservatism (like Priuses) (Sexton and Sexton 2014; Griskevicius, Tybur, and Van den Bergh 2010), as they are more expensive and more conspicuous than the average vehicle. However, Tesla poses a better example of an innovation maximizing conspicuousness and invidious comparison. While other EVs, such as the Nissan Leaf, rely exclusively on conspicuous altruism, Tesla more comprehensively captures conspicuousness by being adhering to the traditional canons of conspicuous consumption through positioning itself as a luxury brand, while concomitantly capturing conspicuous altruism by tapping pro-environmental signaling.

For example, as shown in Figure 3, though a Tesla is twice the cost of all other EVs, it makes up about 23% of the EV stock in the Nordics (making it the third most common brand overall), and it was by far the most discussed brand both by the experts during the interviews, and also by the consumers in focus groups. This indicates that following the canons of conspicuous diffusion has garnered Tesla more recognition and acceptance by experts and consumers, and an easier path to adoption as compared to other EV brands.

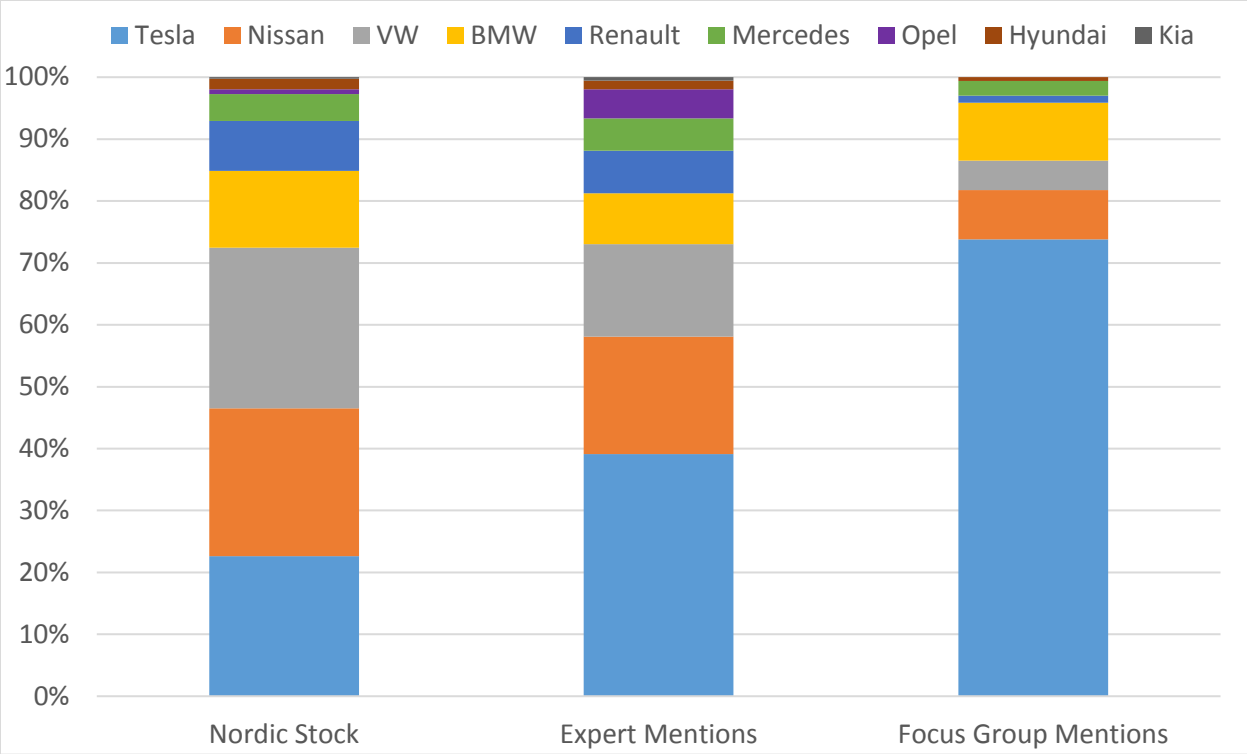

Figure 3. Comparing overall stock of EVs in the Nordics (total sold by brand, 2011-2017) to number of times mention by experts in interviews and in the focus groups. Source: Authors and (EAFO 2017).

However, Tesla has more than just social recognition as a result of its conspicuousness. Although there was nearly the exact same amount of Nissan's sold as Tesla's before 2015 in the Nordics (EAFO 2017) (already an achievement given the vast price gap between the two and overall company size), experts overwhelmingly credited Tesla for normalizing and catalyzing the adoption of EVs in the Nordics. For example, repeating how negative of an image the Buddy had, R234 credited Tesla's luxury with repairing the public image EVs:

> *"Like I said before, the Buddy had almost a laughable image, it's a nutty car. So I think actually Tesla knowingly or unknowingly has actually contributed to promoting electric vehicles in a very positive way, it's a dream that come true for a lot of people*."

In addition, R111 credited Tesla for changing the market and the perception of EVs across the world as well as in Denmark, particularly because of its coolness and luxury:

> *"Then, the next phase was Tesla, which made a big change globally, and in Denmark, because it was one of the first cars to get six stars from moto-journalists, who were actually the most skeptical about EVs. So suddenly there was an EV that was better than any other car in the market and even though it was expensive, people thought 'that's a cool car'. So now it was proven that you could make a cool EV."*

Experts consistently credited the conspicuous consumption and luxury aspects of Tesla as redeeming EVs, even in comparison to other EV's conspicuous conservation (Sexton and Sexton 2014). For example, R106 credited Tesla over other EVs in improving awareness and opinions on EVs while

implying that electric mobility is only possible for the majority of people because it now is *not* conspicuously pro-environmental:

> *"I will say that it is amazing to see how Tesla has remade EVs in terms of making people aware that electric mobility is actually possible. It's not something where you have to be eco-religious."*

Ironically, the successes Tesla enjoys in the Nordics highlight that the solution to EV adoption was not to increase the utility of the EV as compared to the Th!nk and Buddy, but instead actively increase the overall *disutility* of the EV, by increasing the conspicuous wastefulness. Importantly, Tesla has an advantage over other modern EVs in that they incorporate several aspects of conspicuousness and wastefulness, allowing innovators to more visibly invidiously distinguish themselves in accordance with their identity and individual values. Firstly, the discussion of Tesla often coincided with the sexualization of conspicuous consumption and costly signaling theory (Sundie et al. 2011; Collins, Baer, and Weber 2015; Janssens et al. 2011; Segal and Podoshen 2013; Griskevicius et al. 2007; Saad and Vongas 2009). Indeed, R196 specifically credited the success of Tesla to the sexual appeal of the car to men:

> *"A guy who buys a car, he buys his car with a dick, he doesn't buy with his brain. Eighty percent, and that's why Tesla succeeded, because it appeal to his dick. Boom."*

Tesla may have also recognized the mate attraction aspect of luxury and conspicuous consumption, which one can see in its saucy plan for their models spelling out S-E-X-Y (della Cava 2017), as shown in Figure 4. As a result, Tesla was frequently gendered, as conspicuous diffusion would expect, towards men. For example, one survey found that current electric vehicle ownership in the Nordics is overwhelmingly male, as ~71% of current EV owners were men (B. K. Sovacool et al. 2018). At the same time, women in focus group F7 also interpreted that the conspicuous aspects of the Tesla was gendered towards men showing off, implying that the costly signal was successful sent by men and interpreted by women (Sundie et al. 2011):

> "*Well I feel like the guy you told me about who had a Tesla and was so proud of it, I don't see that many girls do that. I wouldn't do that*."

Figure 4: Tesla Advertisement showing their vehicles as "Sexy".

While costly signaling may be an incentive for certain groups to conspicuously consume Teslas, a strength of Tesla is that it encapsulates a variety of conspicuous aspects, each potentially appealing to different lifestyles and identities. As compared to what one might expect in the literature (Sexton and Sexton 2014), there was less discussion of conspicuous conservativism, and when mentioned it tended to be discussed on equal footing of luxury. To demonstrate, R61 noted that it is rare for conspicuous conservatism to also have such a level of luxury:

> *"And it's cool and a lot of people that earn a lot of money want to have a Tesla, and it's not so common that an environmental product are that kind of luxury. It's like a Bang and Olufsen kind of project. It's not so common. I don't know, I don't remember any other like environmental project that had that kind of luxury."*

Likewise, R70 believed that selfish motives were just as important as conspicuous conservatism and pro-environmental behavior for consumers that adopted Tesla's:

> *"The typical Tesla buyer is normally well educated, liberal, globalist kind of person. They do it as much for the environment as for their own ego."*

Most prominently, much of the discussion tended to focus on traditional conspicuous consumption (i.e., high price and quality). Interestingly, though the experts framed the Tesla as a luxury good, they concomitantly acknowledged that compared to traditional luxury cars, such as the Porsche or Lamborghini, the Tesla was actually inferior in quality and lower in price. For example, R234 noted that Tesla changed the status of EVs in Norway due to its luxury, but was actually cheaper than its competitor, Jaguar:

> *"It's a luxury image. The luxury car, a luxury sports car, which is north of a hundred in about three or four seconds, it's wicked. Because of the tax regime, it's sort of half the price it should be. It's an affordable luxury car which people can only dream about. It's a ridiculous price. Yea,*

> *if you want to buy a similar sports car, Jaguar, you got to go outward to double the amount. Tesla can be read as automotive luxury made available to a wider market segment. I think that's had quite an impact actually. It's not a joke car, it's a serious piece of machinery."*

Moreover, R143 noted that although a Tesla was markedly cheaper than other traditional luxury cars, the quality of a Tesla was also comparatively inferior:

> *"If you take the Porsche or the Lamborghini, and if you look at the same performance level, you get three or four Tesla's for the same price, and they don't mind the price of course. But what they have criticized about the Tesla is the quality of the car."*

From a conspicuous consumption perspective, one may assume that the fact Tesla is less costly also implies that it less wasteful and thus less conspicuously valuable. However, conspicuous value is more than just the over-pricing of goods, but rather the material display of status (Bagwell and Bernheim 1996, 350). Thus, even though Teslas may be cheaper than traditional luxury cars, they *display* more conspicuous value, including both conspicuous consumption and conspicuous altruism. In addition, viewing the Tesla through conspicuous diffusion gives it another advantage over traditional luxury vehicles, as purchasing a Tesla endows the adopter with a new form of invidious comparison by being an early adopter in a niche market (Schaefers 2014), whereas purchasing a car like a Porsche grants no such benefit. Thus, the more conspicuous display of altruism, consumption, and innovation may compensate for the comparative lack of quality and price, depending on the lifestyle of an individual, and the related values and beliefs. The culmination of the conspicuous aspects of the Tesla is that it has become fashionable and encourages pecuniary emulation, which according to R104, is key to the adoption of electric vehicles:

> *"And when it comes down to electrical cars, it's very much down to fashion and perception of what I do. And the minute it gets fashionable to drive an electrical car [snaps fingers], it can cost a lot."*

The conspicuous diffusion success of Tesla is even clearer when held in comparison to the views expressed about other EVs, especially the Nissan Leaf. Whereas Tesla incorporates various forms of conspicuousness, the Leaf focuses exclusively on conspicuous conservatism and pro-environmental signaling. This fails to capture both the coolness and sexiness (or masculinity) embodied with a Tesla. An over-reliance on pro-environmental signaling may even be counterproductive, especially when considering that many individuals may actively seek to avoid pro-environmental signaling, so-called "brown to keep down" (Brick, Sherman, and Kim 2017). Indeed, in tandem with the distrust and unpopularity of environmentalism, the Nissan Leaf does not capture the full spectrum of conspicuousness, as it conspicuously less wasteful than the Tesla. As such, experts tended to denigrate the Nissan Leaf, and consumers were left generally confused about its status.

Even experts who were currently driving the Nissan Leaf framed the car as unattractive and unappealing, meaning it does not adhere to the conspicuous consumption construction of beauty (Trigg 2001). For example R42 was ashamed of their Nissan Leaf, and envious of Tesla:

> *"I'm driving a Nissan Leaf. I'm waiting for the Tesla Model 3, it's good-looking car. The Nissan is ugly as hell but, yeah, you need cool cars you're not ashamed of."*

Some may expect that the Nissan Leaf would have conspicuous value similar to the ways the Prius has been shown to have (Sexton and Sexton 2014; Delgado, Harriger, and Khanna 2015), but this was not the case in the expert's perspectives on the Nissan. Many experts depicted the Nissan Leaf as a car without status, especially as compared to the Tesla, such as R95:

> *"Cars are status symbols. If you are rich enough to buy a Tesla, it's okay. But there is nothing prestigious about a Nissan Leaf."*

Instead of the Nissan Leaf being considered an expensive luxury vehicle, it is instead depicted as at an economic disadvantage to other sexier, more status-orientated cars, like R107 suggests:

> *"Nissan Leaf, which costs the same as a sexy, well-equipped BMW 5 series, it's quite an obvious challenge, and only few people want to buy this product without some kind of substantial incentive."*

Because the Nissan Leaf fails to incorporate multiple aspects of conspicuousness, it is not considered fashionable like the Tesla, and does not encourage pecuniary emulation. Instead, the Nissan Leaf becomes disreputable to the average consumer, not to be envious of, but rather to be afraid of, as R124 claims:

> *"So instead of thinking or being almost envious of [the interviewee's Leaf], they are a little afraid of the technology."*

More notably, as shown in Figure 3, most of the consumers were not even aware of the Nissan Leaf (much less fear it), which emphasizes the potential impact of failing to include conspicuousness in the technology for its societal diffusion. Consumer EV recognition of the Nissan in the focus group (8%) was a third of what their stock is in the Nordics (24%), and the two brands which were identified more as EV brands, BMW and Tesla, are also associated more explicitly with conspicuous consumption (though Tesla is also likely more recognized by consumers since it exclusively sells EVs). Even when Nissan was mentioned, focus group respondents expressed uncertainty; such as when one respondent in F3 questioned whether the Nissan Leaf was actually a full EV or not, before moving onto Tesla:

> *"The Nissan Leaf? I think it is, but I think it is a hybrid… let's say Tesla, because everybody knows Tesla."*

4.3 Pecuniary Emulation: Developing New Social Norms

Beyond the comparative advantage Tesla has by adhering to conspicuous consumption, the company has also further progressed EVs in general through the conspicuous diffusion process. Tesla is creating new social norms on the viability of reputably owning an EV, particularly for high socioeconomic males. Consequently, the narrative of the conspicuousness of Tesla increased shared knowledge among consumers, which in turn progressed market development (Rosa 2005). These next steps of conspicuous consumption can already be witnessed in the distinction between Norway and the rest of the Nordics. For example, the conspicuous diffusion process in Norway has arguably entered the second adopter group, "Early Adopters", with around 9% of EVs out of the total vehicle fleet by Q4 2017 (EAFO 2017), which is reflected in two ways. First, as R81 argues, Tesla's in Norway have begun to lose some of the conspicuous value which made them "special":

> *"I think in the beginning it was like 'wow it's a Tesla', and then when you come to Oslo, and you see a Tesla on every corner, you're like 'I guess it's not that special.'"*

Secondly, because Tesla has created a new social norm, EVs have begun to shift from invidious comparison to pecuniary emulation. This was also felt by the consumers in Norway, as evidenced by our Norwegian focus group, where one respondent in F8 noted that simply owning an EV was not sufficiently fashionable, but rather they needed to keep up with the trends:

> *"We can afford all these luxuries. We buy new electrical cars when the other one is just outdated, it still works but we buy a new one when it's not in fashion anymore, you need something new."*

At the same time that EVs in Norway became a social norm, the prices also decreased in Norway due to the fall in battery pack costs and generous policy incentives, which made EVs more affordable for the average Norwegian. Nonetheless, several of the experts credited Tesla as forcing other OEMs, such as BMW and Volkswagen, strategically respond by introducing their own EVs, particularly within Norway (EAFO 2017). To illustrate, R109 credited Tesla has forcing other OEMs from opposing EVs to driving further adoption of EVs:

> *"We could see that Tesla's success changed the automobile company's priorities big time, because they knew Tesla was coming but didn't believe they would be a success. So that has gone all the way to the boardrooms of BMW and forced them to make better EVs. So they went from being against EVs to wanting to be a part of the solution. They are serious about it and now developing good cars."*

More strongly, R143 was confident that without Tesla (disregarding the Nissan Leaf), there would be no EVs on the market today:

> *"Yes, I am almost a hundred percent sure that if the Tesla never showed up, then we wouldn't have any electric vehicles, because companies like BMW, Mercedes, Volkswagen, even GM, even Japanese companies, they are developing EVs to protect their existing product lines."*

These viewpoints were also shared by the consumers in the focus groups, even outside Norway. For example, one focus group participant in Sweden (F2) credited Tesla with forcing Volkswagen to react by switching their lineup to EVs:

> "*And you see of course these companies like Tesla who have been in the forefront, and now you see other more reactionary car. Volkswagen just announced today that they want to switch to electrical*."

Seen from the perspective of Figure 2, Tesla drove further diffusion of EVs by changing the canons of conspicuousness, causing other institutions and OEMs to strategically respond and adhere to a new social norm as EVs shift from the "Innovator" to the "Early Adopter" adopter category in Norway.

Finally, a lesson to be learned for other countries is that if Tesla and luxury EVs are the first step towards an eventual EV diffusion to the majorities, then the pushback against granting Tesla's tax incentives may be in fact counterproductive, as it will slow the transition from the innovator to the early adopter stage. Some, such as R79, believed that removing benefits from EVs because of concerns of how this benefits Tesla owners was illogical:

> *"If you promote a new technology, it is going to be expensive. But this is a technology people will benefit from, because the prices will come down and the current market will have a big impact on people's health. I don't understand that argument, it's stupid."*

Conspicuous diffusion would dictate that the luxury EV is a necessary first step, but the next steps would lead to less conspicuous and more useful EVs. The next steps of conspicuous diffusion are already occurring in Norway, where less conspicuous vehicles are being introduced and sold (EAFO 2017). In the same way, Tesla's production plans transitioned from conspicuous luxury models (e.g., Roadster and Model S), to a more common car (the Model 3). Looking forward, the successful diffusion of EVs depends primarily on the transition of the EV's value proposition being based largely conspicuous value to increasingly utility-based.

5. Discussion & Conclusion

In this paper we have introduce a new theory, conspicuous diffusion, which integrates conspicuous consumption with the diffusion of innovation. We show the relevance of conspicuous diffusion by applying it to the status of EVs in the Nordics, and summarize our findings in Figure 5. We argue conspicuous diffusion fits the data well and provides three new concluding insights.

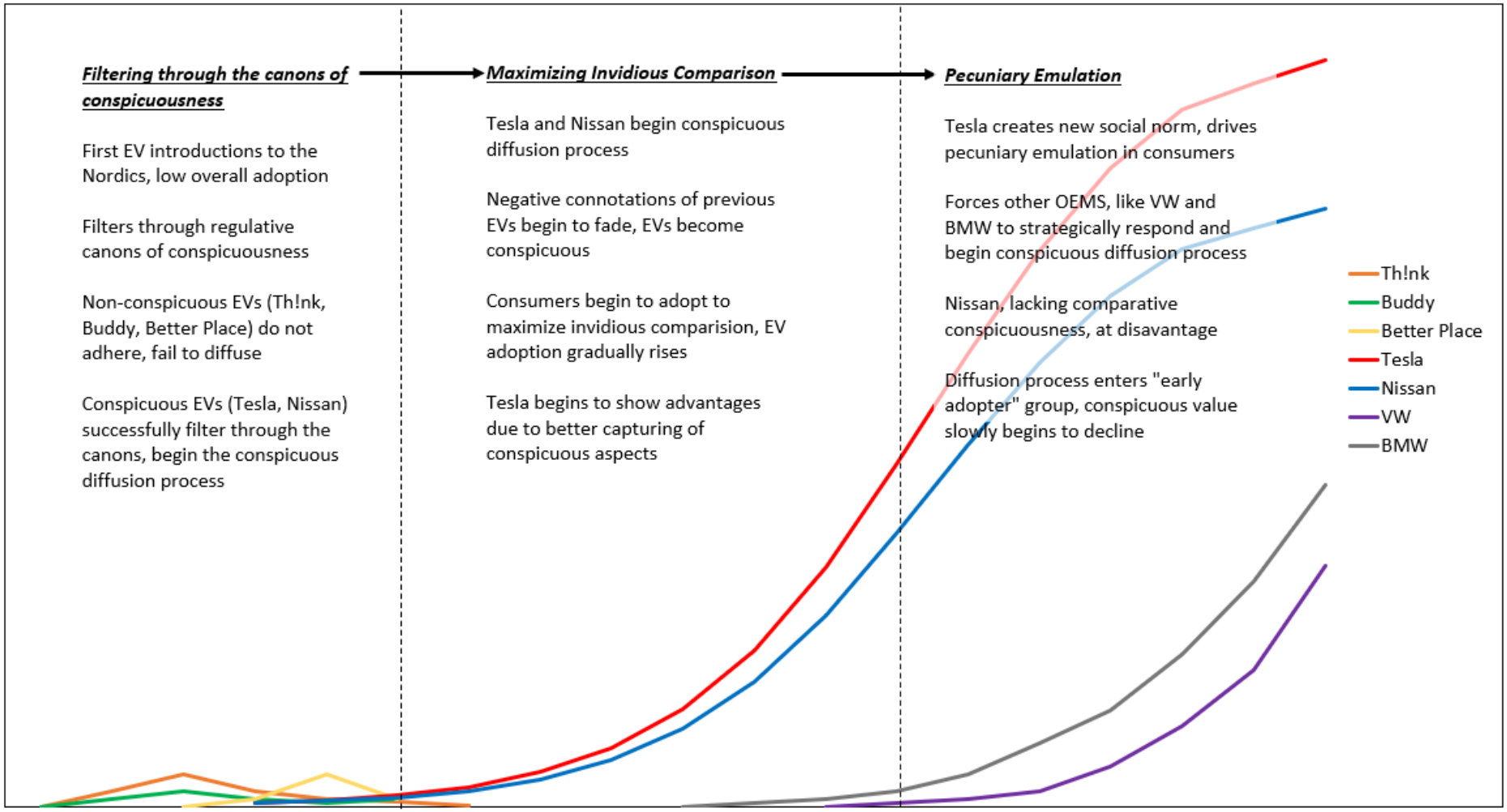

Figure 5. Idealized Representation of the Conspicuous Diffusion of Various EVs. The curves for each of the EV brands is meant to depict the process discussed in Section 4, roughly represented by combining market share and perceived conspicuous value.

First, conspicuous diffusion radically challenges the design and application of existing policy mechanisms across the Nordic region, namely in Iceland, Sweden, Finland and Denmark where EV diffusion is still in the beginning processes. Conspicuousness is an important aspect to diffusion, and policy cannot afford to ignore the role it plays in diffusion. For if an innovation is particularly conspicuous and has benefits for society, like EVs, then the government should seek to harness and utilize the conspicuous aspects of the innovation to drive further adoption, viewing luxury innovations, such as Tesla, as necessary first step towards full adoption. At the same time, government should avoid "punishing" innovators only because they are luxury products in the conspicuous diffusion process, as this will hinder the conspicuous diffusion process. On the other hand, this does not mean that that there should be no concern about equity when formulating policies such as EV incentives.

Instead policymakers may want to adjust incentives based on the type of innovation and where it is on the conspicuous diffusion process. For example, decreasing the cost of a Tesla through policy incentives will certainly increase adoption rates, though a more equitable policymaker may want to want to focus more on incentivizing less conspicuous EVs such as the Nissan Leaf (Brick, Sherman, and Kim 2017). At the same time, policies which increase the visibility of EVs, such as free parking or use of the bus lane, may benefit the Tesla more by increasing its conspicuous value (Griskevicius, Tybur, and Van den Bergh 2010). To ensure that a signal is properly interpreted, government should also seek to inform and educate consumers about the innovation. That is, it is difficult to make a consumer envious of a Tesla driving in the bus lane when the consumer is unaware what a Tesla is, or that it is an EV (and that any EV is eligible for driving in the bus lane). Thus, to encourage diffusion of a conspicuous innovation, policymakers should seek a portfolio of social and economic carrots to increase visibility for and economic access to conspicuous innovations. Conversely, if the conspicuous innovation had negative externalities for society (e.g., smoking cigarettes (Heffetz 2011)), then policymakers should seek to reduce visibility and increase the economic barriers of access, such as increase taxes and ban public smoking.

Second, our specific data on conspicuous consumption, especially concerning Tesla and the Nissan Leaf, suggests that the automotive industry also reconsider their technical development strategy and manufacturing pathways. Perhaps non-intuitively, developers of innovations may want to *increase* the price of their innovation, fully develop the conspicuous and luxury aspects of the technology, and make their innovation less conformative and more unique in appearance to increase its social visibility. That is, EV developers may want to copy current constructions of luxury cars, such as the materials and build quality, but also advertize the specific luxury attributes of an EV, such as reduction in noise and better acceleration. Not only could this motivate higher early adoption rates (due to status-seeking behavior), but this may also more naturally fit within the early business model, where development costs are high and it is difficult to sell the innovation at a loss (Griskevicius, Tybur, and Van den Bergh 2010; Schaefers 2014). Then as the conspicuous diffusion process continues, the next steps could be framed as converting conspicuous value towards mass production, as the canons of consciousness increases shared knowledge among consumers (Rosa 2005).

Furthermore, compared to other luxury goods, there is a noticeable lack of luxury advertising in regards to EVs. Luxury advertising may play an important role in the conspicuous diffusion process, as it can increase the knowledge of consumers, beginning the innovation decision process (Rogers 2003), while also establishing the conspicuous value of the innovation and validating the luxury status of the innovation for those who do purchase the innovation (Mathiowetz 2010). Finally, we also propose that

the marketing strategy should be cognizant of the gendered aspects of conspicuous diffusion, as men may be particularly interested in earlier adoption as a means to attract a mate by costly signaling. On the other hand, other research has found that women also have romantic motives for conspicuous consumption, both in mate attraction (i.e., blatant benevolence (Griskevicius et al. 2007)) and also mate guarding (Zabkar and Hosta 2013). Such motives could allow industry to open new market segments through conspicuous diffusion, and we recommend that these are additional aspects of conspicuousness that could help ensure the successful diffusion of an innovation (similar to how Tesla encapsulated various forms of conspicuousness).

Third, for scholars and academics, conspicuous diffusion offers a more tangible and unified conceptualization of conspicuous consumption, which the literature argues is a major shortcoming of Veblen's original theory (Patsiaouras and Fitchett 2012; Campbell 1995). Our study also points the way towards future research - it could for instance connect conspicuous diffusion to larger societal implications of Veblen's research, such as the role of institutions and technological determinism (Veblen and Banta 2009; Papageorgiou and Michaelides 2016; Brette 2003). Conspicuous diffusion may also improve the understanding of how status and socioeconomics actively guide and determine the diffusion process.

As such, it is proposed that conspicuous consumption characteristics should be included in future diffusion studies, to test whether this increases the explanatory power of diffusion models. A particularly interesting case for future study may be the increase of EV diffusion in China, as it can test the relevance of conspicuous diffusion across different societies and geographies. Likewise, conspicuous consumption characteristics and adherence to the canons of conspicuousness may also explain past failures. Future research should investigate the ways that conspicuous diffusion could moderate successful diffusion, both in regards to the types of products, the perceived conspicuousness, and how it may vary from society to society (or even within subpopulations). Additionally, since our case study of EVs are still in the middle of the diffusion process, future research should focus on historical analyses of conspicuous diffusion of an innovation that has already completed the diffusion process.

Similarly, conspicuous diffusion also helps explain the importance of actors within the diffusion process, namely opinion leaders. In this way, conspicuous diffusion strengthens both conspicuous consumption and diffusion of innovation theories. Additionally, conspicuous diffusion may help to develop the link between individual-focused models, like innovation of diffusion, and other transition models, such as the multi-level perspective. For example, conspicuous diffusion may provide insights into some of the current debates within the multi-level perspective, namely the questions of which actors drive innovation, and how users change practices in response to niche innovations (Geels et al. 2018). However, at the same time, our research shows that diffusion of innovations is not driven by only cost and performance, nor even by discourses and expectations, but rather by status and luxury, especially notions of coolness and sexiness. The academy may need to recalibrate their theoretical lenses and heuristics about innovation and diffusion accordingly.

Bibliography

Anderson, Monica. 2015. “Technology Device Ownership: 2015.” Pew Research Center. http://www.pewinternet.org/2015/10/29/technology-device-ownership-2015.

Arrow, Kenneth J., and Partha S. Dasgupta. 2009. “Conspicuous Consumption, Inconspicuous Leisure.” *The Economic Journal* 119 (541).

Bagwell, Laurie Simon, and B. Douglas Bernheim. 1996. “Veblen Effects in a Thoery of Conspicuous Consumption.” *The American Economic Review* 86 (3): 349–73.

Brette, Olivier. 2003. “Thorstein Veblen’s Theory of Institutional Change: Beyond Technological Determinism.” *The European Journal of the History of Economic Thought* 10 (3): 455–77. https://doi.org/10.1080/0967256032000106698.

Brick, Cameron, David K. Sherman, and Heejung S. Kim. 2017. “‘Green to Be Seen’ and ‘Brown to Keep down’: Visibility Moderates the Effect of Identity on pro-Environmental Behavior.” *Journal of Environmental Psychology* 51 (August): 226–38. https://doi.org/10.1016/j.jenvp.2017.04.004.

Campbell, Colin. 1995. “Conspicuous Confusion? A Critique of Veblen’s Theory of Conspicuous Consumption.” *Sociological Theory* 13 (1): 37. https://doi.org/10.2307/202004.

Cava, Marco della. 2017. “Tesla Angled for a S-E-X-Y Model Line-Up.” USA Today. March 24, 2017. https://www.usatoday.com/story/tech/talkingtech/2017/03/24/tesla-angled-s-e-x-model-line-up/99587238/.

Collins, Jason, Boris Baer, and Ernst Juerg Weber. 2015. “Sexual Selection, Conspicuous Consumption and Economic Growth.” *Journal of Bioeconomics* 17 (2): 189–206. https://doi.org/10.1007/s10818-015-9200-9.

Delgado, Michael S., Jessica L. Harriger, and Neha Khanna. 2015. “The Value of Environmental Status Signaling.” *Ecological Economics* 111 (March): 1–11. https://doi.org/10.1016/j.ecolecon.2014.12.021.

EAFO. 2017. “Vehicle Stats.” European Alternative Fuels Observatory Home. 2017. http://www.eafo.eu/vehicle-statistics/m1.

Geels, Frank W. 2012. “A Socio-Technical Analysis of Low-Carbon Transitions: Introducing the Multi-Level Perspective into Transport Studies.” *Journal of Transport Geography* 24 (September): 471–82. https://doi.org/10.1016/j.jtrangeo.2012.01.021.

Geels, Frank W., and Victoria Johnson. 2018. “Towards a Modular and Temporal Understanding of System Diffusion: Adoption Models and Socio-Technical Theories Applied to Austrian Biomass District-Heating (1979–2013).” *Energy Research & Social Science* 38 (April): 138–53. https://doi.org/10.1016/j.erss.2018.02.010.

Geels, Frank W., Tim Schwanen, Steve Sorrell, Kirsten Jenkins, and Benjamin K. Sovacool. 2018. “Reducing Energy Demand through Low Carbon Innovation: A Sociotechnical Transitions Perspective and Thirteen Research Debates.” *Energy Research & Social Science* 40 (June): 23–35. https://doi.org/10.1016/j.erss.2017.11.003.

Graham-Rowe, Ella, Benjamin Gardner, Charles Abraham, Stephen Skippon, Helga Dittmar, Rebecca Hutchins, and Jenny Stannard. 2012. “Mainstream Consumers Driving Plug-in Battery-Electric and Plug-in Hybrid Electric Cars: A Qualitative Analysis of Responses and Evaluations.” *Transportation Research Part A: Policy and Practice* 46 (1): 140–53. https://doi.org/10.1016/j.tra.2011.09.008.

Griskevicius, Vladas, Joshua M. Tybur, Jill M. Sundie, Robert B. Cialdini, Geoffrey F. Miller, and Douglas T. Kenrick. 2007. “Blatant Benevolence and Conspicuous Consumption: When Romantic Motives Elicit Strategic Costly Signals.” *Journal of Personality and Social Psychology* 93 (1): 85–102. https://doi.org/10.1037/0022-3514.93.1.85.

Griskevicius, Vladas, Joshua M. Tybur, and Bram Van den Bergh. 2010. “Going Green to Be Seen: Status, Reputation, and Conspicuous Conservation.” *Journal of Personality and Social Psychology* 98 (3): 392.

Heffetz, Ori. 2011. “A Test of Conspicuous Consumption: Visibility and Income Elasticities.” *Review of Economics and Statistics* 93 (4): 1101–1117.

Heffner, Reid R., Kenneth S. Kurani, and Thomas S. Turrentine. 2007. “Symbolism in California’s Early Market for Hybrid Electric Vehicles.” *Transportation Research Part D: Transport and Environment* 12 (6): 396–413. https://doi.org/10.1016/j.trd.2007.04.003.

Hidrue, Michael K., George R. Parsons, Willett Kempton, and Meryl P. Gardner. 2011. “Willingness to Pay for Electric Vehicles and Their Attributes.” *Resource and Energy Economics* 33 (3): 686–705. https://doi.org/10.1016/j.reseneeco.2011.02.002.

IEA. 2017. “Global EV Outlook 2017.” Paris, France: OECD/IEA. https://www.iea.org/publications/freepublications/publication/GlobalEVOutlook2017.pdf.

Jacobson, Mark Z., Robert W. Howarth, Mark A. Delucchi, Stan R. Scobie, Jannette M. Barth, Michael J. Dvorak, Megan Klevze, et al. 2013. “Examining the Feasibility of Converting New York State’s All-Purpose Energy Infrastructure to One Using Wind, Water, and Sunlight.” *Energy Policy* 57 (June): 585–601. https://doi.org/10.1016/j.enpol.2013.02.036.

Janssens, Kim, Mario Pandelaere, Bram Van den Bergh, Kobe Millet, Inge Lens, and Keith Roe. 2011. “Can Buy Me Love: Mate Attraction Goals Lead to Perceptual Readiness for Status Products.” *Journal of Experimental Social Psychology* 47 (1): 254–58. https://doi.org/10.1016/j.jesp.2010.08.009.

Jennings, Jeremy. 2007. “The Debate about Luxury in Eighteenth- and Nineteenth-Century French Political Thought.” *Journal of the History of Ideas* 68 (1): 7–105.

Kemp, René, and Massimiliano Volpi. 2008. “The Diffusion of Clean Technologies: A Review with Suggestions for Future Diffusion Analysis.” *Journal of Cleaner Production* 16 (1): S14–21. https://doi.org/10.1016/j.jclepro.2007.10.019.

Lyytinen, Kalle, and Jan Damsgaard. 2001. “What’s Wrong with the Diffusion of Innovation Theory?” In *Diffusing Software Product and Process Innovations*, edited by Mark A. Ardis and Barbara L. Marcolin, 173–90. Boston, MA: Springer US. https://doi.org/10.1007/978-0-387-35404-0_11.

MacVaugh, Jason, and Francesco Schiavone. 2010. “Limits to the Diffusion of Innovation: A Literature Review and Integrative Model.” *European Journal of Innovation Management* 13 (2): 197–221. https://doi.org/10.1108/14601061011040258.

Mathiowetz, Dean. 2010. “Feeling Luxury: Invidious Political Pleasures and the Sense of Touch.” *Theory & Event* 13 (4).

Meade, Nigel, and Towhidul Islam. 2006. “Modelling and Forecasting the Diffusion of Innovation – A 25-Year Review.” *International Journal of Forecasting* 22 (3): 519–45. https://doi.org/10.1016/j.ijforecast.2006.01.005.

Noel, Lance, and Benjamin K. Sovacool. 2016. “Why Did Better Place Fail?: Range Anxiety, Interpretive Flexibility, and Electric Vehicle Promotion in Denmark and Israel.” *Energy Policy* 94 (July): 377–86. https://doi.org/10.1016/j.enpol.2016.04.029.

Norsk Elbilforening. 2013. “Så mange elbiler er det i Norge nå.” October 22, 2013. https://web.archive.org/web/20160616221430/http://www.elbil.no/nyheter/statistikk/3103-sa-mange-elbiler-er-det-i-norge-na.

Papageorgiou, Theofanis, and Panayotis G. Michaelides. 2016. “Joseph Schumpeter and Thorstein Veblen on Technological Determinism, Individualism and Institutions.” *The European Journal of the History of Economic Thought* 23 (1): 1–30. https://doi.org/10.1080/09672567.2013.792378.

Patsiaouras, Georgios, and James A. Fitchett. 2012. “The Evolution of Conspicuous Consumption.” Edited by Ben Wooliscroft. *Journal of Historical Research in Marketing* 4 (1): 154–76. https://doi.org/10.1108/17557501211195109.

Rogers, Everett M. 2003. *Diffusion of Innovations*. 5th ed. New York: Free Press.

Rosa, J. A. 2005. “Micro-Level Product-Market Dynamics: Shared Knowledge and Its Relationship to Market Development.” *Journal of the Academy of Marketing Science* 33 (2): 197–216. https://doi.org/10.1177/0092070304269839.

Saad, Gad, and John G. Vongas. 2009. “The Effect of Conspicuous Consumption on Men’s Testosterone Levels.” *Organizational Behavior and Human Decision Processes* 110 (2): 80–92. https://doi.org/10.1016/j.obhdp.2009.06.001.

Schaefers, Tobias. 2014. “Standing out from the Crowd: Niche Product Choice as a Form of Conspicuous Consumption.” *European Journal of Marketing* 48 (9/10): 1805–27. https://doi.org/10.1108/EJM-03-2013-0121.

Schuitema, Geertje, Jillian Anable, Stephen Skippon, and Neale Kinnear. 2013. “The Role of Instrumental, Hedonic and Symbolic Attributes in the Intention to Adopt Electric Vehicles.” *Transportation Research Part A: Policy and Practice* 48 (February): 39–49. https://doi.org/10.1016/j.tra.2012.10.004.

Segal, Brenda, and Jeffrey S. Podoshen. 2013. “An Examination of Materialism, Conspicuous Consumption and Gender Differences: Materialism, Conspicuous Consumption and Gender Differences.” *International Journal of Consumer Studies* 37 (2): 189–98. https://doi.org/10.1111/j.1470-6431.2012.01099.x.

Sexton, Steven E., and Alison L. Sexton. 2014. “Conspicuous Conservation: The Prius Halo and Willingness to Pay for Environmental Bona Fides.” *Journal of Environmental Economics and Management* 67 (3): 303–17. https://doi.org/10.1016/j.jeem.2013.11.004.

Sovacool, Benjamin K. 2017. “Experts, Theories, and Electric Mobility Transitions: Toward an Integrated Conceptual Framework for the Adoption of Electric Vehicles.” *Energy Research & Social Science* 27 (May): 78–95. https://doi.org/10.1016/j.erss.2017.02.014.

Sovacool, Benjamin K, and David J Hess. 2017. “Ordering Theories: Typologies and Conceptual Frameworks for Sociotechnical Change.” *Social Studies of Science* 47 (5): 703–50. https://doi.org/10.1177/0306312717709363.

Sovacool, Benjamin K., and Richard F. Hirsh. 2009. “Beyond Batteries: An Examination of the Benefits and Barriers to Plug-in Hybrid Electric Vehicles (PHEVs) and a Vehicle-to-Grid (V2G) Transition.” *Energy Policy* 37 (3): 1095–1103. https://doi.org/10.1016/j.enpol.2008.10.005.

Sovacool, Benjamin K., Johannes Kester, Lance Noel, and Gerardo Zarazua de Rubens. 2018. “The Demographics of Decarbonizing Transport: The Influence of Gender, Education, Occupation, Age, and Household Size on Electric Mobility Preferences in the Nordic Region.” *Global Environmental Change* 52 (September): 86–100. https://doi.org/10.1016/j.gloenvcha.2018.06.008.

Sovacool, Benjamin K., Lance Noel, and Renato J. Orsato. 2017. “Stretching, Embeddedness, and Scripts in a Sociotechnical Transition: Explaining the Failure of Electric Mobility at Better Place (2007–2013).” *Technological Forecasting and Social Change* 123 (October): 24–34. https://doi.org/10.1016/j.techfore.2017.05.037.

Sovacool, BK, J Axsen, and S Sorrell. 2018. “Promoting Novelty, Rigor, and Style in Energy Social Science: Towards Codes of Practice for Appropriate Methods and Research Design.” *Energy Research & Social Science* In press.

Stackelberg, Katherine von, Jonathan Buonocore, Prakash V. Bhave, and Joel A. Schwartz. 2013. “Public Health Impacts of Secondary Particulate Formation from Aromatic Hydrocarbons in Gasoline.” *Environ. Health* 12: 13.

Sundie, Jill M., Douglas T. Kenrick, Vladas Griskevicius, Joshua M. Tybur, Kathleen D. Vohs, and Daniel J. Beal. 2011. "Peacocks, Porsches, and Thorstein Veblen: Conspicuous Consumption as a Sexual Signaling System." *Journal of Personality and Social Psychology* 100 (4): 664.

Trigg, Andrew. 2001. "Veblen, Bourdieu, and Conspicuous Consumption." *Journal of Economic Issues* 35 (1): 99–115.

Veblen, Thorstein, and Martha Banta. 2009. *The Theory of the Leisure Class*. Reissued. Oxford World's Classics. Oxford: Oxford Univ. Press.

Venkatesh, Morris, Davis, and Davis. 2003. "User Acceptance of Information Technology: Toward a Unified View." *MIS Quarterly* 27 (3): 425. https://doi.org/10.2307/30036540.

Venkatesh, Viswanath, James YL Thong, and Xin Xu. 2012. "Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology." *MIS Quarterly*, 157–178.

Wang, Yajin, and Vladas Griskevicius. 2014. "Conspicuous Consumption, Relationships, and Rivals: Women's Luxury Products as Signals to Other Women." *Journal of Consumer Research* 40 (5): 834–54. https://doi.org/10.1086/673256.

White, Lee V., and Nicole D. Sintov. 2017. "You Are What You Drive: Environmentalist and Social Innovator Symbolism Drives Electric Vehicle Adoption Intentions." *Transportation Research Part A: Policy and Practice* 99 (May): 94–113. https://doi.org/10.1016/j.tra.2017.03.008.

Zabkar, Vesna, and Maja Hosta. 2013. "Willingness to Act and Environmentally Conscious Consumer Behaviour: Can Prosocial Status Perceptions Help Overcome the Gap?: Willingness to Act and Environmental Behaviour." *International Journal of Consumer Studies* 37 (3): 257–64. https://doi.org/10.1111/j.1470-6431.2012.01134.x.

Zhang, Ting, Sonja Gensler, and Rosanna Garcia. 2011. "A Study of the Diffusion of Alternative Fuel Vehicles: An Agent-Based Modeling Approach*: Diffusion of Alternative Fuel Vehicles." *Journal of Product Innovation Management* 28 (2): 152–68. https://doi.org/10.1111/j.1540-5885.2011.00789.x.